

NH DOT Supplemental Design Criteria

The following information is to supplement the FHWA [*Roundabouts: An Informational Guide \(2000\)*](#) for roundabout design on New Hampshire state maintained roadways. For roundabouts being designed on municipal roadways the following criteria may not apply.

2.0 Roundabout Consideration

Roundabouts can be placed at an intersection under any type of operational control. Due to the improved safety, operation and capacity benefits of roundabouts it shall be standard procedure at the NH DOT to evaluate any intersection considering signal control to see if a roundabout would be beneficial.

4.0 Operation

4.3 Capacity

See the [*Roundabout Capacity Worksheet*](#) to analyze capacity of proposed single or multi-lane roundabouts.

4.5 Computer Software for Roundabouts

Operational Analysis: aaSidra Software (preferred), [*Roundabout Capacity Worksheet*](#), if RODEL is used see the NH DOT supplemental criteria for using RODEL software ([*RODEL Settings*](#))

6.0 Geometric Design:

6.1.2 Design Process

Thru Movements*: Provide path deflection of the approach vehicle such that the vehicle is required to slow to 15 – 20 mph within the circulatory roadway. R2, circulatory radius is critical for controlling thru traffic speed.

Left Turn Movement*: Travel speed is controlled by truck apron diameter (typically 10 – 15 mph).

Right Turn Movements*: A function of the curb radius and splitter islands between adjacent approaches

* - Consult Green Book (2004) for speed-curve relationship, vehicle remains within circulatory roadway. Avoid designing strictly for R1/R2/R3 relationship as described in *Roundabouts: An Information Guide (2000)* since this can result in a very tight design for trucks to negotiate.

6.2.2 Design vehicle

Standard design vehicle – WB-62

Special design vehicle – WB-67

All roundabouts should consider WB-67 design vehicles (special larger vehicles if anticipated, ex. modular homes, etc.) if in proximity to an interstate or on roads approved for use by 53-foot trailers. The Department of Safety

Motor Carrier Division listing of roads allowing 53-foot trailers should be consulted prior to choosing a design vehicle. A link to that listing can be found at: <http://www.nh.gov/safety/divisions/dmv/hpeo/faqmc.html>

Design vehicles shall traverse the roundabout without off-tracking over the outside curbing or onto the splitter island curbing.. All vertical and sloped curbing shall be placed to avoid trailer off-tracking (rear axles passing over curbing). The central island curbing, the curbing on the outside of the roundabout and the splitter island curbing should be vertical unless mountable slope curbing is needed for a specific reason.

6.2.4 Inscribed diameter (outside limits of circulatory roadway)

- a. Single Lane: 125 feet preferred *.
- b. Two Lane: 175 feet preferred *.

* An Engineering study (geometric, traffic operation, right-of-way) shall be performed in all cases particularly when considering less than preferred diameter. In all cases the design vehicle shall be capable of traversing the roundabout within the circulatory roadway, using the truck apron as necessary.

6.3.2 Entry and Exit widths

- a. Single Lane: 14 to 16 feet
- b. Two Lane: 28 to 30 feet

Accommodated desired design vehicle; avoid off-tracking over curbing and beyond pavement limits.

6.3.3 Circulatory Roadway

- a. Bit. Asphalt surface (Depth – based on ADL and shoving potential)
- b. Cross slope: 2%
- c. Single Lane: 14 – 18 feet
- d. Two Lanes: 26 – 30 feet, large tractor-trailer's (WB-65 and larger) may use both lanes.

6.3.4 Truck Apron

- a. Single Lane: 10 – 14 feet
- b. Two Lane: 2 – 8 feet
- c. Cross Slope: 2%
- d. Maximum Reveal (Truck Apron to Circulatory Roadway): 1.5”
(provide reveal via special beveled granite curb,)
- e. Surface: stone cobbles (preferred), painted, textured concrete

6.3.7 Pedestrians

Provide crosswalks at all approaches and place one car length (20 feet) back from yield line. Crosswalks should be placed even in locations with no sidewalks to ensure pedestrians know where to cross the roundabout.

6.3.9 Sight Distance

Be cautious in providing generous sight distance. Greater sight distance result in faster operating speeds. Minimum – 100 feet (rule-of-thumb). Maximum – Based on conflicting approach speed (*Roundabouts: An Information Guide*), avoid unlimited sight distance.

6.3.12 Bicyclists

Sidewalk ramps that allow bicyclists to enter and exit the sidewalk from the bike lane should be used.

6.3.14 Parking

No parking is to be allowed within 20 feet of a crosswalk per State law.

7.3 Illumination

As a minimum the ends of the splitter islands and crosswalks should be lit so drivers can observe pedestrians and recognize the approaching splitter islands and roundabout. This lighting can be accomplished through the use of low-level lighting or standard street lighting.